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A NEW ISOPOD FROM THE DEEP SEA

BY

Å NORDENSTAM

LULEÅ, SWEDEN

terial of Isopoda kindly placed at my by the collector, Professor O. , consists of a single species, which en at three stations situated near each the North Atlantic. The species, elongs to the group *Eurycopini* of the *Parasellidae*, is new to science. One of imens was found at a depth of 7,900— , which is the greatest depth hitherto o be inhabited by Isopods. The spe- are all damaged, which naturally must ase with deep-sea species hauled to the

Bathyopsurus n. gen.

is.

part of the head, anteriorly from the for the antennulae and the antennae, , trapezoidal and separated from the sterior part of the head by a furrow. ulae and antennae situated dorsally on . Antennulae with anterio-lateral parts first joint expanded into a broadly lobe. Antennae with small but distinct Under lip with anterior margin of the bes broadly rounded. Mandibles devoid r process and palp; incessive part well ed and furnished with 5 teeth; left e with a movable lacinia; setae-row veloped. Second pair of maxillae with bes comparatively broad, each fur- with four apical setae. Maxilliped with e very short and with distal margin of podite broadly rounded; palp comparatively slender with second and third joints not expanded and longer than they are broad. Basipodite of the first pereiopods about three times as long as the basipodites of the second, third and fourth pereiopods. Basipodite of the seventh pereiopods very feeble and between one third and half as long as the basipodite of the fifth and sixth pereiopods. Female operculum very broad, almost twice as long as it is broad and with distal margin almost straight. In the first pair of male pleopods each pleopod has the sympodite and the rami coalesced into a single plate without traces of any junction; distal part, composed of the fused rami, outstanding and obtusely pointed. Second pair of male pleopods with broad sympodite and short rami, which are situated near each other.

Remarks.

As a rule in *Parassellidae* valuable generic characters are found in the mandibles. Thus HANSEN 1916 retains the genus *Munnopsurus* RICHARDSON because of the characteristic shape of its mandibles, though he points out that the genus is closely allied to *Eurycope* G. O. SARS. HANSEN refers to the genus *Munnopsurus*, *M. giganteus* G. O. SARS, and *M. longipes* TATTERSALL and considers the specimen described by VANHÖFFEN 1914 under the name of *Eurycope gigantea* forma *australis* as a third species belonging to *Munnopsurus*. The mandible of *Munnopsurus australis* has not been described. HANSEN (1916) says: »In *Eurycope* the mandibles have the incisive part and the

movable lacinia (on the left mandible) well developed, and generally a row of setae, rarely a single seta; the molar process is considerably protruding, rather well defined and its end cut off. In the two northern species of *Munnopsurus* the incisive part is simple with a single tooth or none, the movable lacinia and the row of setae completely wanting, while the molar process is shaped as a broad, large tubercle with the end rounded and bearing a bundle of stiff setae. In no form hitherto studied mandibles intermediate between those in *Eurycope* and *Munnopsurus* have been found, and therefore the genus *Munnopsurus* must at least provisionally be considered as valid, though in all other characters it is closely allied to *Eurycope*».

In the new genus *Bathyopsurus*, the incessive part and the lacinia (on the left mandible) are well developed. In this respect and in the well-developed row of setae it agrees with *Eurycope*. In *Bathyopsurus*, on the other hand, the molar process is completely wanting. In this respect the genus differs considerably from *Eurycope*, but almost agrees with *Munnopsurus*, where the molar process is much reduced in size. Though the new genus does not agree in detail with *Munnopsurus* as regards the molar process it can none the less be regarded as exhibiting intermediate features between *Eurycope* and *Munnopsurus*. Thus it is possible in accordance with the view of HANSEN (1916) that both *Munnopsurus* and *Bathyopsurus* must eventually be cancelled and their species referred to *Eurycope*.

Bathyopsurus differs from both *Eurycope* and *Munnopsurus* in the lack of a mandibular palp. Moreover there are other characters which are probably of generic value, especially in the shape of the epipodite and palp of the maxillipeds, the shape of the under lip, the very feeble basipodite of the seventh pair of pereiopods, the shape of the first pair of pleopods in the male and the shape of the female operculum.

Bathyopsurus nybelini[1]) n. s

Localities and material.

St. 370 (Haul No. 9), N 19° 49′ W
N 19° 42′ W 64° 44′, Aug. 17th—18
depth 7,900—7,625 m. One ♀
about 21 mm in length.

St. 371 (Haul No. 10), N 24° 12′ W
N 24° 28′ W 63° 18′, Aug. 20th 194
5,850—5,860 m. 8 specimens. L
the largest specimen (♀ with half-d
oostegits) about 45 mm.

St. 373 (Sledge-Trawl), N 28° 25′ W
N 28° 05′ W 60° 49′, Aug. 23rd—24
depth 5,500—5,987 m. Fragment o
specimen consisting of the last thre
segments and the abdomen. It can
tified as *Bathyopsurus nybelini* by
racteristic female operculum.

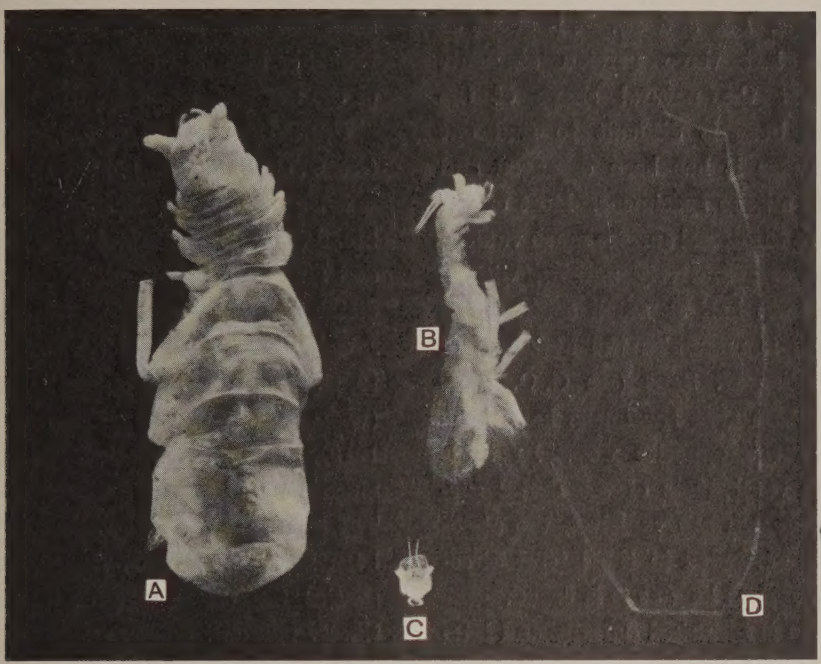
Types. Male, length about 25 mm. (
female, length about 37 mm. (fig. 1
minute oostegits on the coxae of the
pereiopods.

Description

The general shape of the body (see
and B). There is, as usual in the *Eury*
marked difference between the anteri
the body, consisting of the head and
four pereion segments together, and the
part, which consists of the last three
segments and the abdomen. The
portion of the body is broader than the
and about twice as long.

Head (figs. 1 A, B and C). About
as the first three pereion segments
of the fourth pereion segment together
rior margin straight, lateral margi
slightly convex, posterio-lateral corners
rounded, anterio-lateral corners m
rowly rounded. The antennulae
antennae are inserted in incisions
dorsal surface of the head; these
are situated a little less than two

[1]) The name is in honour of the collector
O. NYBELIN, superintendent of the Museum
History in Gothenburg.



A. Female, type specimen, in a dorsal view. 1.8 x. B. Male, type specimen, in a lateral view. 1.9 x. of another specimen, dorsal view. D. second antenna, fourth and fifth joints and part of the flagellum, 1.9 x.

ıgth of the head from its posterior The incisions are very large and al- ıeet each other in the middle, so that ıaining part of the head between the s shows a sculpturing which is some- milar to an hour-glass. The front part ıead anterior to the incisions protrudes ıort almost trapezoidal area, which is ed from the rest of the head by a deep The front part is situated on a lower han the rest of the head. This front the head is about four times as broad long and has its anterior margin slightly . The front portion of the head is by a groove into an anterior and a r part, of which the anterior part is l on a lower plane than the posterior. ad is furnished with sparse setae at ı its lateral parts.

on (figs. 1 A and B). The first four seg- ıre about equal to one another in length adth. They are furnished with a row of long the anterior margin, and scattered setae are situated on the lateral parts of the dorsal surface.

The last three segments are all about the same breadth; in the fully grown specimens about the same length; in the smaller (and younger) specimens the seventh segment is distinctly shorter than the sixth. The fifth segment is strongly curved, so that its posterior margin is concave and its anterior margin strongly convex; thus a distinct waist is formed between the first four and the last three segments. The sixth segment is similar to the fifth but has its anterior margin less convex than in the fifth segment; its posterio-lateral corners, which are rounded, extend to the anterior margin of the abdomen; thus they conceal the narrow lateral parts of the seventh segment in a dorsal view. The seventh segment has its anterior margin convex and its posterior margin straight.

The last three segments are furnished with setae in a similar way to the first four segments but they are slightly more setiferous.

Abdomen (figs. 1 A and B). It is about as long as the last three pereion segments together. What the natural shape of the abdomen has been is difficult to find out in detail, because it has been damaged and compressed in all the specimens. Most of the specimens have the dorsal surface much vaulted and therefore comparatively narrow, with a length of at least half as much again as its breadth. Thus it resembles the abdomen of *Munnopsis typica* M. SARS (see G. O. SARS 1899, Pl. 57). The type specimens have been compressed in the opposite way. In these specimens the vaultedness of the dorsal surface of the abdomen has vanished, the abdomen has been expanded in the lateral directions and is about as long as it is broad.

The abdomen is furnished dorsally and laterally with scattered setae.

Antennulae (fig. 2 A). Only the first four joints and a part of the flagellum have been preserved. In its large first joint the anteriolateral part protrudes as a broadly rounded lobe. The second joint is small, the third joint a little less than twice as long as the second. The fourth joint again is very small. As regards seate on the joints and other details see the figure.

Antennae (fig. 1 D). Broken in all the specimens between the fourth and the fifth joint, but loose fragments of other parts of the antennae are preserved.

The first four joints are short. There is a distinct but minute squama on the outer part of the distal margin of the third joint. The squama is about as long as it is broad, slightly tapering towards the end, and has its distal margin rounded and setiferous. Thus it has the shape as figured by HANSEN (1916) for *Paramunnopsis oceanica* TATTERSALL (see HANSEN, 1916, Pl. 13, fig. 11 b). For the fourth and fifth joints of the peduncle and a part of the flagellum see fig. 1 D. The antennae must be more than three times the length of the body. The photographed part of an antenna was found in a sample containing a female specimen with a length of about 21 n probably belongs to that specimen; th of the antennal fragment was about 5

Upper lip. As in *Munnopsis typica* (see G. O. SARS, 1899, Pl. 57).

Lower lip (fig. 2 B). The outer lo broad and have the distal margin broad ded and densely setiferous. Broadly distal margins of the lobes are also f *Munnopsurus giganteus* (G. O. SARS) a to G. O. SARS (1885) and in *Eurycope* (WALKER) (see WALKER, 1903, and TATT 1910), but in these species the lobes a more narrow than in *Bathyopsurus* The lower lips of four species of *Eurycope* been figured by G. O. SARS, 1897. species the distal ends of the lobes tinctly pointed.

It is not improbable that the lower afford generic characters.

The mandibles (figs. 2 C and D) trace of molar process or palp. The i part is furnished with five dark-brow four of them are visible in the fig lacinia is present on the left mandibl row with 17 setae on the left and 8 the right mandible; in addition there the right mandible three small setae the teeth (fig. 2 D).

First pair of maxillae (fig. 2 E). Ou with two parallel rows of stout and st on its distal margin.

Second pair of maxillae (fig. 2 F). outer lobes are comparatively broad; furnished with four stout apical setae.

Maxillipeds (fig. 2 G). The second a joints of the palp are not expanded, longer than they are broad. The epipo not reach to the proximal margin of t Endite with 9 coupling-hooks.

The pereiopods (figs. 3 A and B). The broken, as a rule between the basipo the ischiopodite, but there are two lo ments of pereiopods consisting of the joints (figs 3 A and B).

A. Antennula, 13 x. B. Lower lip, 27 x. C. Left mandible, 35 x. D. Right mandible, 35 x. E. First maxilla, 35 x. F. Second maxilla, 35 x. G. Maxilliped, 13 x.

coxae are small and ring-like. On the ur pereiopods they are situated at the margins of the segments and protrude in a dorsal view as small »coxal plates»; last three pairs of pereiopods they are l in the posterio-lateral corners of the ts.

vo of the specimens there are oostegits, protrude from the coxae of the first four f pereiopods. One large ♀ specimen length of about 45 m. has the oostegits veloped. They reach with their distal almost to the middle of the sternites, except in the first segment, where they are much shorter. The female type specimen is furnished with minute but distinct oostegites, which are only about as long as or a little longer than the coxae of their respective pereiopods.[1])

The basipodites of the pereiopods are mode-

[1]) As regards the oostegits in *Isopoda*, female specimens can be found in four stages: 1. specimens without trace of oostegits, 2. with minute oostegits, 3. with half-developed oostegits, 4. with fully developed marsupium. It is probable that these stages follow each other in turn after every moult. Thus four moultings would be needed between the breeding periods of a female specimen.

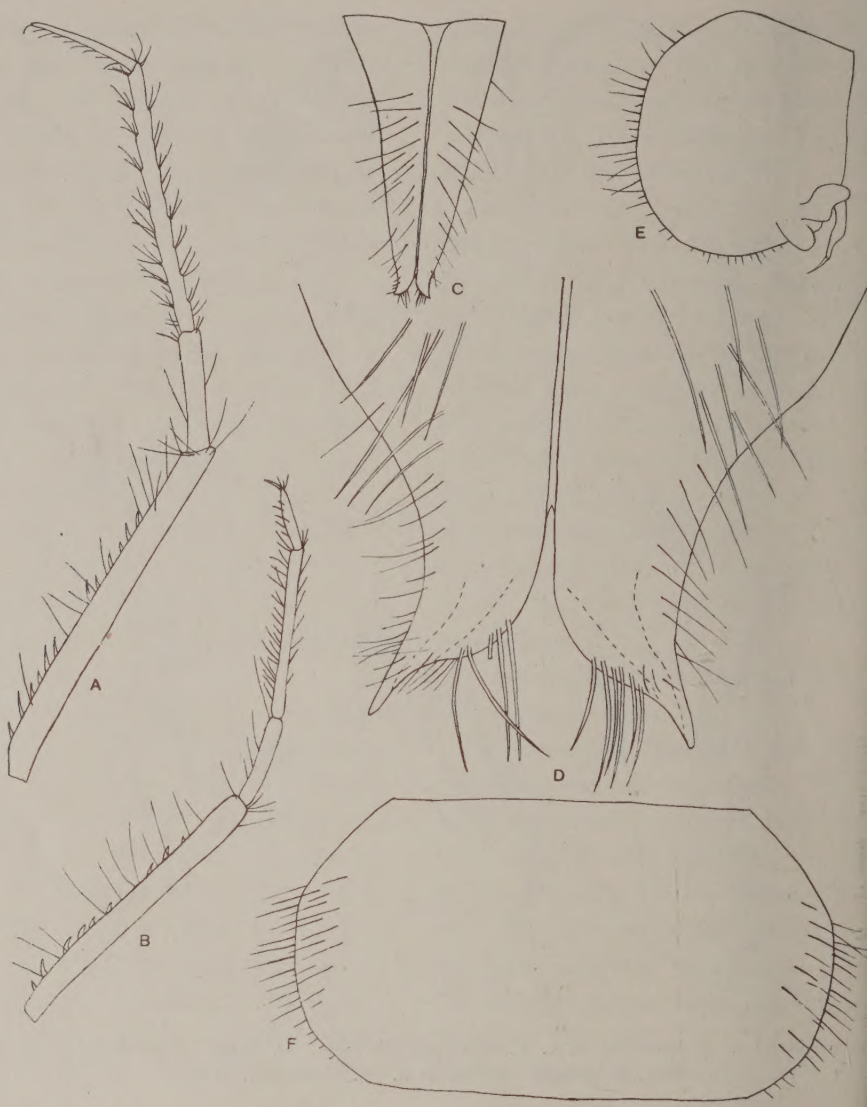


Fig. 3. A. and B. The last four joints of two of the pereiopods, 2.9 x. C. First pair of male pleopo
the anterior side, 8 x. D. Distal ends of the same pleopods, seen from the anterior side, 70 x. E. Left
pleopod, seen from the posterior side, 8 x. F. Female operculum, seen from the anterior side,

rately setiferous. The basipodite of the first pair of pereiopods is about as long as the first three pereion segments together, while the basipodites of the second, third and fourth segments are short and only about as long as their respective segments.

The basipodites of the fifth and sixth pairs of pereiopods are long and strong and about equal in length, while the basipodite of the seventh pair is very feeble, only from one third to half as long as the basipodites
and sixth pairs. The feebleness of
pair of pereiopods cannot reasonabl
the youngness of the specimens, as it
in the largest of the specimens (♀ wit
loped oostegits, with a length of abo

The loose fragments of periopods sh
A and B must be from one of the firs

First pair of pleopods (♂) (figs. 3
The sympodites are coalesced wit

trace of any junction and the rami esced with each other. The plate y the pleopods tapers towards its end or its distal corners, which are out- diverging and obtusely pointed. The vaulted anterior (ventral) side of the is furnished with long setae. The (dorsal) side of the pleopodal plate is excavated and furnished somewhat from the fused rami with the usual ng elevations, which slightly diverge h other towards the distal ends. The ni of each pleopod are on the posterior vated into a groove (indicated with nes in fig. 3 D).

Second pair of pleopods (♂) (fig. 3 E). Comparatively broad. The small rami are situated near each other.

Female operculum (fig. 3 F). Almost twice as long as it is broad and with distal margin almost straight. The operculum in the specimens is, however, not well preserved; it has been compressed and folded in different ways. Its anterior surface is vaulted and devoid of longitudinal keel in the middle; it is laterally furnished with setae.

The other pleopods are very thin and fragile and have been damaged.

Uropods missing.

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LIST OF ISOPODS RECORDED FROM A DEPTH OF 3,000 M. OR MORE, IN THE LITERATURE AT MY DISPOSAL.

	Depth in m	Expedition	Auth
Parasellidae			
Iolanthe acanthonotus BEDDARD	3,065	Challenger	BEDDARD 188
	3,398	German Ant. Exp.	VANHÖFFEN
Haploniscus spinifer HANSEN	3,376	Dan. Ingolf Exp.	HANSEN 1916
Haploniscus curvirostris VANHÖFFEN	3,423	German Ant. Exp.	VANHÖFFEN
Hydroniscus abyssi HANSEN	3,422	Dan. Ingolf Exp.	HANSEN 1916
Haplomunna caeca (RICHARDSON)	3.993	U. S. Albatross	RICHARDSON
Ischnomesus thomsoni (BEDDARD)	3,751	Challenger	BEDDARD 188
Ischnomesus bacillus (BEDDARD)	3,294	Challenger	BEDDARD 188
Ischnomesus profundus HANSEN	3,422	Dan. Ingolf Exp.	HANSEN 1916
Haplomesus quadrispinosus (G. O. SARS)	3,422	Dan. Ingolf Exp.	HANSEN 1916
Haplomesus tenuispinis HANSEN	3,376	Dan. Ingolf Exp.	HANSEN 1916
Macrostylis abyssicola HANSEN	3,138, 3,376 and 3,422	Dan. Ingolf Exp.	HANSEN 1916
Macrostylis latifrons BEDDARD	3,751	Challenger	BEDDARD 188
Nannoniscus armatus HANSEN	3,422	Dan. Ingolf Exp.	HANSEN 1916
Desmosoma longispinum HANSEN	3,422	Dan. Ingolf Exp.	HANSEN 1916
Acanthocope spinicauda BEDDARD	3,294	Challenger	BEDDARD 188
Ilyarachna spinossisima HANSEN	3,422	Dan. Ingolf Exp.	HANSEN 1916
Ilyarachna antarctica VANHÖFFEN	3,397 and 3,423	German Ant. Exp.	VANHÖFFEN
Ilyarachna abyssorum	4,060—4,165	Travailleur et Talisman	
Syneurycope parallela HANSEN	3,376	Dan. Ingolf Exp.	HANSEN 1916
Storthyngura fragilis (BEDDARD)	3,294 and 3,431	Challenger	BEDDARD 188
Storthyngura intermedia (BEDDARD)	3,795	Challenger	BEDDARD 188
Storthyngura elegans VANHÖFFEN	3,423	German Ant. Exp.	VANHÖFFEN
Storthyngura truncata (RICHARDSON)	2,745—3,184	fide NIERSTRASZ 1941	
Munnopsurus australis (VANHÖFFEN)[1]	3,423	German Ant. Exp.	VANHÖFFEN
Bathyopsurus nybelini n. sp.	7,900—7,625	Swed. Deep-Sea Exp.	
	5,850—5,860	Swed. Deep-Sea Exp.	the present p
	5,500—5,987	Swed. Deep-Sea Exp.	
Eurycope murrayi (WALKER)	1,680—3,127		WALKER 1903
	3,000	German Ant. Exp.	VANHÖFFEN
Eurycope vicarius VANHÖFFEN	3,423	German Ant. Exp.	VANHÖFFEN
Eurycope ovalis VANHÖFFEN	3,423	German Ant. Exp.	VANHÖFFEN
Eurycope abyssicola BEDDARD	3,980	Challenger	BEDDARD 188
Eurycope spinosa BEDDARD	3,568	Challenger	BEDDARD 188
Eurycope spinifrons GURJANOVA	908—3,000	fide NIERSTRASZ 1941	GURJANOVA
Paramunnopsis oceanica (TATTERSALL)	3,000	German Ant. Exp.	VANHÖFFEN
Paramunnopsis spinifer VANHÖFFEN	4,000 and 3,000	German Ant. Exp.	VANHÖFFEN
Anthuridae			
Anthelura abyssorum NORM. et STEBB.	3,202	Valourus Exp.	NORMAN and 1886
Serolidae			
Serolis bromleyana SUHM	3,614	Challenger	BEDDARD 188
Serolis naera BEDDARD	3,733	Challenger	BEDDARD 188
Arcturidae			
Astacilla caeca BENEDICT	3,340		BENEDICT 18
Antarcturus furcatus (STUDER)	3,065	Challenger	BEDDARD 188
Antarcturus glacialis (BEDDARD)	3,065	Challenger	BEDDARD 188
Antarcturus abyssicola (BEDDARD)	4,293	Challenger	BEDDARD 188
Gnathiidae			
Gnathia elongata (KRÖYER)	120—3,000	fide NIERSTRASZ 1941	GURJANOVA

[1]) Described by VANHÖFFEN (1914) under the name of *Eurycope gigantea* G. O. SARS forma *australis*.